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ABSTRACT

Factors which may play a role in regulating cognitive interaction, and thereby help determine the cognitive opportunities children have when they work with others, are discussed. Discussion focuses first on individual contributions as mediators of joint cognitive activity, and second on the way participants' shared social history may influence the social generation of cognitive opportunity. Findings suggest that the process by which adults, particularly parents, influence children's learning is not yet clearly established. Nor is it known just what aspects of interpsychological functioning regulate the interactional process and potentially affect the intrapsychological outcome for the child. It is argued that it is time for cognitive developmental research to move beyond the assertion that social context is a mechanism of cognitive development and begin to examine the operations of social context that promote, or perhaps impede, cognitive growth. (RH)

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FACTORS MEDIATING SOCIAL CONTEXT, COGNITIVE DEVELOPMENT, AND COGNITIVE GROWTH

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The study of cognitive capabilities has, since its outset, been concerned with the origins and growth of intellectual functioning. For many theorists, cognitive processes emerge in response to pressing internal demands to make sense of the world around us. But research findings have make it increasingly apparent that the content and processes of cognitive development are strongly influenced by social forces as well. How the child's early practical actions integrate with and are affected by the social context is, therefore, a central question for developmental psychologists.

Consideration of the social context as a vibrant component of individual mental growth is a relatively new direction for psychological study. Psychology is the study of the individual and except for a few select areas of pscyhological investigation, we tend to forget that we are social beings. It is true that some psychological processes may be less affected by social experience than others However, it is probably also the case that no psychological processes are entirely unaffected by contextual influences of one sort or another. The diversity of this panel attests to this point. Recent interest in context not withstanding, psychology's emphasis on individual activity within the laboratory context has limited our understanding of cognitive development for the simple reason that much of

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children's thinking develops in practical contexts as other people guide the use and development of cognitive skill (Laboratory of Comparative Human Cognition, 1983; Rogoff, 1982; Vygotksy, 1978; Wertsch, 1984).

Vygotsky's (1978) concern with creating a psychology that included the social origins and influences on cognitive functioning has provided a rich template for addressing these concerns. For Vygotsky, the social world in which the child is embedded channels development. Vygotsky emphasized that development occurs in situations where the child's problem solving is guided by an adult who structures and models ways to solve a problem. Adults, or more experienced members of society, arrange the environment so that the child can reach a level beyond his or her present capabilities when working on his or her own. The structure provided in communication serves as a scaffold (Wood & Middleton, 1975) for the learner, providing contact between old and new knowledge. In this way, the social world provides the child with cognitive opportunities that encourage and support learning and growth. However these opportunities are not resources for cognitive growth in the same way that the material world is a resource for cognitive growth. The social world, unlike the material world, provides the developing mind with a dynamic and mutually generated context which originates in and is maintained through the contributions and goals of the participants.

In my work I have been studying factors which may play a role in regulating cognitive interaction, and thereby help determine the cognitive opportunities children have when

working with others. These factors extend across several dimensions of cognitive interaction, and include the nature of the interactional process, the individual contributions of the participants, and the shared social history of the dyad. These factors, which I discuss below, may work individually or together to structure interaction and thereby regulate cognitive opportunities and growth.

The social process, in particular the nature of collaboration, may affect the cognitive opportunities that arise during joint problem solving. Research indicates that collaboration can vary tremendously, and may involve collective decision making, observational learning, direct instruction, emotional support with or without cognitive assistance, have little or no emotional support, be minimally interactive, or be some combination of these collaborative efforts (e.g., see Azmitia, 1987; Bandura, 1977; Botvin & Murray, 1975; Gauvain & Rogoff, 1989; Morrison & Kuhn, 1983). Despite extensive investigation of adult-child collaboration of various sorts, it is far from clear how these different patterns influence the cognitive opportunities available during interaction.

In a study of children's spatial planning, Barbara Rogoff and I investigated the nature of collaboration and its relationship to the development of planning skills (Gauvain & Rogoff, 1989). We found that the nature of collaboration, in particular the extent to which participants shared responsibility and decision making during joint planning, was related to later solitary performance, with greater sharing of responsibility between partners when planning together related to more effective planning by the child when planning later

on his or her own. An investigation by Robert Reeve and Ann Brown (Reeve, 1987) which studied the role of responsibility sharing in adult-child collaboration on arithmetic problems yielded similar results. These studies support the notion that joint problem solving may be more beneficial than working alone, but with one important qualification. Cognitive gains from adult-child interaction were not independent of the process of collaboration which unfolded as the participants jointly constructed an understanding of as well as an approach to the task. The suggestion that sharing responsibility leads to greater likelihood of benefiting from social interaction than if partners do not share responsibility does not preclude other means of social influence, e.g. opportunity to observe others making decisions or practicing a skill. Nor do these findings, which are correlational, tell us much about the causal linkage between patterns of interaction and later individual cognitive functioning. My main point is that the connection between social interaction, cognitive opportunity, and cognitive growth is far from substantiated and careful examination of factors that may structure the process and outcome of joint cognitive activity is needed before conclusions as to which patterns of collaboration are more beneficial are warranted.

What participants bring individually and collectively to an interaction may also mediate the cognitive opportunities available. For example, individuals differ in their skill at providing and soliciting assistance when needed. In an analysis of adult guidance on a joint memory task, Barbara Rogoff and I (1986) examined the instructional patterns

mothers used in preparing their children for a solitary memory test, and the relationship of these patterns to the child's performance on the test. We found that while some parents offered guidance that was fine tuned to a child's needs as he or she proceeded through the task, others treated the instructional interaction as little more than a guessing game in which the adult knew the answers and the child had to figure them out. These patterns of adult involvement were related to different outcomes on the test, with adult guidance that was responsive to the child's learning requirements, as well as allowing for substantial involvement by the child during the interaction, related to better memory on the solitary posttest. These observations, which are consistent with those of Reeve and Brown (Reeve, 1987), suggest that the process and outcome of cognitive interaction may result from different approaches taken by more experienced partners in structuring an interaction.

Although adults or more experienced partners may differ in how they guide a child's participation on a joint task, it is unclear whether these differences are due to the adult's skill in organizing instructional activities or to other contextual factors, such as the purpose or goal of the interaction. We cannot assume that adults always have instructional goals in mind when they work on problems with children. Goals such as mutual enjoyment, competition, demonstration, or control, to name just a few possibilities, may also structure adult-child interaction. I recently conducted a study to examine whether the goal of an interaction influences the nature and extent of guidance

that adults provide for children on a joint cognitive task (Gauvain, 1989). In this study, which also focused on children's planning skills, I manipulated whether mothers were aware of an upcoming solitary posttest for the child. As predicted, when adults were aware of a posttest, they provided more instruction and guidance than when they did not have advance knowledge of the posttest. These results do not discount the notion that teacher skill may play an important role in mediating the cognitive opportunities available in social interaction. However they do suggest that for cognitive gains to occur, the purpose of the interaction may be critical in determining how an adult participates in the task, and thereby helps shape the cognitive opportunities that emerge.

In addition to the contributions of the adult as mediators of social interaction, children may also differ in their ability to benefit from cognitive interactions. Although Vygotsky's description of the zone of proximal development implies individual variability in both the adult's and child's participation, developmental researchers have been far more attentive to the contributions of the adult than the child. This bias is not too surprising in that the adult's role in informal instructional exchanges was studied very little by developmental psychologists prior to the emergence of a socio-cultural perspective. (Woek by Sigel, Bandura, and Hess and Shipman are important exceptions to note here.) But the dynamic nature of joint cognitive activity requires attention to contributions of both participants. In a recent paper discussing the child's role in guided participation, Rogoff (in press) discusses this point, stressing that it is both the child's and the adult's

participation which transforms understanding and skill in the problem context.

The contribution of the child, like that of the adult, differs across children, with the most researched difference being that of cognitive competence. However, children also differ in their ability to exploit cognitive resources in the environment, or in other words, to participate in ways that encourages adult guidance. This is illustrated in a study conducted by Grace Mest, Maureen Carbery, and myself (Mest, Gauvain, & Carbery,1987) which compares the planning skills of developmentally delayed children with those of normally functioning children. Although this study was designed to compare individual skill, the procedure required that the experimenter remain in the room with each child during participation. As we expected, the delayed children, who ranged in age from 7 to 16 years with IQ's ranging from 36 to 62, were less effective planners than their nonlabeled counterparts, who ranged in age from 5 to 9 years. What we did not expect was the dramatic difference in the two groups in their attempts to solicit task information and assistance from the experimenter. Delayed children far surpassed the nonlabeled children in both direct and indirect methods of soliciting assistance from the experimenter. Perhaps delayed children are more apt to solicit assistance as a consequence of their unique cognitive socialization which may define the world largely as a cognitive support system. My purpose in drawing your attention to this result is to stress that variability among children in directing or encouraging guidance from others may play an important role in regulating cognitive opportunity in the social context.

So far I have concentrated on individual contributions as mediators of joint cognitive activity. I have recently become interested in how the participants' shared social history may influence the social generation of cognitive opportunity. Let me explain the underpinnings of this work. Research investigating social influences on cognitive development has introduced a unique subject population to the cognitive developmental laboratory. This population is special, not only because more than a single subject is the focus of the investigation, but also because the participants typically come into the lab with a shared social history of some sort. Whether the study involves a parent and child, or siblings, or even "randomly" chosen and assigned classmates, there is a context of knowledge and experience that the participants share with each other that they bring into the lab, and this shared history may help shape the process and outcome of the interaction. Rather than talk about all of these social pairings, let me concentrate on the role of parents and children in joint problem solving because this is most central to my research.

The family unit is the primary context of young children's everyday lives, and it is during this time that much of the foundation of cognitive skills develop. Undoubtedly, the family, in particular parents, play an important role in structuring this development. Through daily instructional encounters of a formal and informal nature parents help their young children develop skill for selecting, approaching, and solving cognitive problems. The cognitive practices exhibited and used by parents when interacting with their children provide opportunities for cognitive practice for their young children, which may in turn

influence the cognitive skills these children develop (Laboratory of Comparative Human Cognition, 1983).

What factors might influence the cognitive opportunities parents provide for their children in the course of these daily encounters? Individual contributions of the child, such as temperament or social conduct, or of the parent, such as parental skill in fostering learning, may help determine the cognitive opportunities available as parents and children work together. Of course, what is important in their interactions is not the child's or the parent's characteristics, per se, but how these characteristics mesh with one another. In the best of worlds, the fit between the parent's competence, for example, and the child's demeanor may serve each other well. But what about the rest of the world? Perhaps the parent is a less than effective teacher or the child is a more than trying learner. Through repeated interactions, characteristics which may have originated in the individual, such as a difficult temperament or a behavioral disorder, may become interactional difficulties. If these problem interactions persist, and as we know from work by Gerald Patterson and colleagues that they often do, what develops over time is a particular type of shared interactional history.

Bev Fagot, Kate Kavanagh, and I (Gauvain, Fagot, & Kavanagh, in preparation) recently completed an analysis of cognitive interaction between mothers and their 2 1/2 year-old children which lends some support to this view. In this study, we examined the nature and extent of maternal guidance and support on a joint problem solving task at 36 months in

relation to maternal temperament ratings of these children at 18 months. Results suggest that maternal assessment of temperament is related to the nature of cognitive guidance mother's provide on a joint task one year after assessment. Children rated as more active by their mother at 18 months were more involved in the task and received more maternal support and strategic assistance during the joint task at 36 months than children rated as less active at 18 months. Children rated as more withdrawn at 18 months received more feedback and evaluation from their mother on their cognitive performance at 36 months than those rated as more outgoing at 18 months. Maternal support was also related to persistence, with children rated as less persistent at 18 months receiving more encouragement and praise at 36 months than those rated as more persistent. These relationships hint at continuity in early parent-child interactional patterns which may affect not only the character of the emotional relationship, but also permeates the cognitive interactions these individuals share.

My current research pursues the issue of shared social history as a potential mediator of parent-child cognitive interaction by focusing on a particular child behavior, noncompliance, which, by definition, interferes with parent-child interaction (Gauvain, in progress). By studying joint cognitive activity between parents and children with conduct disturbances, I am hoping that I will be able to trace ways in which shared social history may regulate the cognitive opportunities which arise from social interaction. Guided participation in these dyads may unfold quite differently than what we see in healthy

dyads, and comparisons of these diffferncs may offer insight into how parents and children in ongoing relationships come to terms with social and cognitive demands as they solve problems together.

In sum, the process by which adults, in particular parents, influence children's learning is not yet clearly established (Springmuhl, 1985), nor do we know just what aspects of interpsychological functioning regulate the interactional process and potentially affect the intrapsychological outcome for the child. The research I have described today points to the importance of examining the process of the cognitive interaction itself, as well as the individual and shared contributions of the participants, in order to understand the connection between social interaction, cognitive opportunity, and cognitive development. It is time for cognitive developmental research to move beyond the assertion that social context is a mechanism of cognitive development and begin to examine how and when the social context operates in ways that promotes, or perhaps impedes, cognitive growth.

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